



Pre-Algebra Workbook

Fractions

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MATH

FRACTIONS

- 1. What is the numerator of the fraction $\frac{1}{3}$?
- 2. What is the denominator of the fraction $\frac{3}{5}$?
- 3. How would we write 40 % as a fraction?
- 4. How would we write 75 % as a fraction?
- 5. If a pizza is cut into 6 equal pieces and Ben eats 2 of them, what fraction of the pizza did Ben eat?
- 6. Hazel is cleaning out her closet. She has 8 sweaters and 2 of them are blue. What fraction of her sweaters are blue?
- 7. Joey cuts a pie into 10 equal slices and eats 1 slice. What fraction of the pie did he eat?



SIMPLIFYING FRACTIONS AND CANCELLATION

■ 1. Write $20/50$ as a simplified fraction.

■ 2. Write $21/49$ as a simplified fraction.

■ 3. Write $110/154$ as a simplified fraction.

■ 4. A fraction is written with the prime factorizations of the numerator and denominator. Simplify the fraction.

$$\frac{2 \cdot 5 \cdot 7}{2 \cdot 5 \cdot 11}$$

■ 5. A fraction is written with the prime factorizations of the numerator and denominator. Simplify the fraction.

$$\frac{2 \cdot 5 \cdot 11}{3 \cdot 5 \cdot 11}$$

■ 6. Complete the statement.



When using prime factorization to reduce fractions, you're looking for the numbers in the numerator and denominator that are the _____ prime number.



EQUIVALENT FRACTIONS

■ 1. Write the fraction $\frac{4}{5}$ in terms of 20ths.

■ 2. Write the fraction $\frac{2}{3}$ in terms of 9ths.

■ 3. Write the fraction $\frac{1}{7}$ in terms of 49ths.

■ 4. Complete the statement.

Equivalent fractions are fractions that are _____ in value.

■ 5. Are the fractions $\frac{2}{16}$ and $\frac{4}{32}$ equivalent?

■ 6. Are the fractions $\frac{3}{15}$ and $\frac{6}{36}$ equivalent?

■ 7. Complete the statement.

Whenever the numerator and denominator of a fraction are equal, the fraction simplifies to _____.



■ 8. What is the value of x ?

$$\frac{2}{10} = \frac{4}{x}$$

■ 9. What is the value of x ?

$$\frac{5}{7} = \frac{x}{35}$$



DIVISION OF ZERO

- 1. Complete the statement.

The fraction $2/7$ means _____ divided by _____.

- 2. Complete the statement.

The number _____ can never be the denominator of a fraction.

- 3. Complete the statement.

The fraction $0/8$ has a value of _____.

- 4. True or false? $5/0$ has a value of 0.

- 5. True or false? 10 times 0 has a value of 0.

- 6. Complete the statement.

$8 \div 2 = 4$, $8 \div 4 = 2$, $2 \cdot 4 = 8$ and $4 \cdot \underline{\hspace{2cm}} = 8$



■ 7. Complete the statement.

$$6 \cdot 0 = 0 \text{ and } 0 \div 6 = \underline{\hspace{2cm}}.$$

■ 8. Complete the statement of why you can't divide by 0.

$7 \div 0$ means that that something times 0 has a value equal to 7. But there is nothing times 0 that will ever equal 7 because anything times 0 will always equal . Therefore, it's impossible to divide by 0.



ADDING AND SUBTRACTING FRACTIONS

■ 1. Complete the statement.

When you're adding and subtracting fractions, you first have to find common _____.

■ 2. Complete the statement.

When finding a common denominator, you have to find the _____ of the two numbers.

■ 3. Complete the statement.

When you add or subtract fractions, you'll add or subtract the numerators and the _____ will stay the same.

■ 4. Find the sum.

$$\frac{1}{9} + \frac{3}{9}$$

■ 5. Find the sum.



$$\frac{3}{4} + \frac{1}{8}$$

- 6. Find the difference.

$$\frac{7}{12} - \frac{2}{6}$$

- 7. Find the difference.

$$\frac{4}{11} - \frac{2}{11}$$

- 8. Find the sum.

$$\frac{1}{16} + \frac{3}{4} + \frac{5}{8}$$

- 9. Simplify the expression.

$$\frac{7}{10} - \frac{1}{10} + \frac{2}{5}$$

- 10. Simplify the expression.



$$\frac{2}{15} + \frac{1}{5} - \frac{1}{30}$$



MULTIPLYING AND DIVIDING FRACTIONS

■ 1. When you're dividing fractions, you need to flip the _____ fraction.

■ 2. Simplify the expression.

$$\frac{3}{5} \cdot \frac{4}{6}$$

■ 3. Simplify the expression.

$$\frac{4}{7} \cdot \frac{2}{9}$$

■ 4. Simplify the expression.

$$\frac{5}{8} \div \frac{1}{12}$$

■ 5. Simplify the expression.

$$\frac{2}{9} \div \frac{1}{15}$$



- 6. Simplify the expression.

$$\frac{1}{10} \cdot \frac{2}{5} \div \frac{1}{4}$$

- 7. Simplify the expression.

$$\frac{3}{5} \div \frac{1}{6} \cdot \frac{4}{9}$$



SIGNS OF FRACTIONS

■ 1. Every fraction has _____ signs (positive or negative signs).

■ 2. Is the statement true or false?

$$\frac{-3}{4} \text{ is equivalent to } -\frac{3}{4}.$$

■ 3. Is the statement true or false?

$$-\frac{1}{6} \text{ is equivalent to } \frac{-6}{1}.$$

■ 4. Is the statement true or false?

$$-\frac{3}{4} \text{ is equivalent to } \frac{3}{-4}.$$

■ 5. Simplify the expression.

$$-\frac{2}{7} \cdot \frac{1}{8}$$



- 6. Simplify the expression.

$$\frac{2}{11} \cdot -\frac{1}{4}$$

- 7. Simplify the expression.

$$-\frac{3}{20} \cdot -\frac{2}{13}$$

- 8. Simplify the expression.

$$-\frac{2}{3} \div \frac{3}{10}$$

- 9. Simplify the expression.

$$\frac{4}{7} \div -\frac{3}{11}$$

- 10. Simplify the expression.

$$-\frac{5}{16} \div -\frac{1}{2}$$



■ 11. If the numerator and the denominator are both negative, the fraction will be _____.



RECIPROCAL

- 1. A reciprocal is what we get when we _____ the fraction.
- 2. What is the reciprocal of $\frac{3}{4}$?
- 3. What is the reciprocal of $-\frac{1}{2}$?
- 4. What is the reciprocal of 3?
- 5. What is the reciprocal of $-\frac{1}{4}$?
- 6. The only number that does not have a reciprocal is _____.
- 7. When we multiply two numbers that are reciprocals of one another, the result is always _____.
- 8. The reciprocal of a negative fraction is _____.



